

REMARKS

This application has been carefully reviewed in light of the Office Action mailed on September 11, 2002. Claims 39-44 have been amended. Attached hereto is a marked-up version of the changes made captioned "APPENDIX A." Claim 45 has been added. Claims 39-45 are pending in this application. Reconsideration of the above-referenced application in light of the amendments and following remarks is requested.

Independent claim 39 now recites "a single thin layer of material secured to said base substrate and covering said aperture such that a cavity is formed, said single thin layer of material having a thickness of from approximately 0.025 to approximately 0.1 mm" (emphasis added). Support is found in Applicant's specification Figure 2 and page 7, line 30 through page 8, line 5.

Claims 40-41, which depend from claim 39, have been amended to maintain proper antecedent basis. Specifically, claims 40-41 have been amended to recite a "single thin layer of material."

Similarly, independent claim 42 recites "a single thin layer of material secured to said top surface of said base substrate and covering said aperture to form a downward facing cavity, said single thin layer of material having a thickness of from approximately 0.025 to approximately 0.1 mm" (emphasis added). Support is found in Applicant's specification Figure 3 and page 11, line 25 through page 9, line 5.

Claims 43-44, which depend from claim 42, have been amended to maintain proper antecedent basis. Specifically, claims 43-44 have been amended to recite a "single thin layer of material."

Claim 45 recites a processor system comprising "a central processing unit; and a memory device . . . comprised of . . . low profile ball grid array semiconductor packages . . . comprised of a base substrate . . . a series of conductive traces . . . a plurality of conductive balls . . . a thin sheet material secured to said base substrate . . . having a thickness of from

approximately .025 to less than 0.1 mm, and a semiconductor element.” (emphasis added). Support is found on page 10, lines 1-5 and page 11, lines 30-32.

Claims 39-44 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakashima et al. (U.S. Patent No. 5,717,252) (“Nakashima”) in view of Maruyama et al. (U.S. Patent No. 6,266,242) (“Maruyama”) and in further view of Ishikawa et al. (U.S. Patent No. 6,158,116) (“Ishikawa”). Reconsideration is respectfully requested.

The cited combination of references fail to teach or suggest a “single thin layer of material” (emphasis added) as recited by claims 39 and 42. Accordingly, claims 39 and 42 should be allowable. Claims 40-41 depend from claim 39, and claims 43-44 depend from claim 42, and incorporate all of the limitations of claims 39 and 42, respectively, and similarly should be allowable.

Moreover, new claim 45 should be allowable since the cited art fails to teach or suggest “a thin sheet material layer having a thickness from approximately 0.025 mm to less than 0.1 mm” (emphasis added). Ishikawa teaches that the outermost boundaries for the thickness of metal film (20) should be 0.1 mm or more due to radiation effects. Thus, Ishikawa teaches away from a metal film (20) less than 0.1 mm thick.

In summary, for all of the reasons set forth above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

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Respectfully submitted,

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APPENDIX A

39. (twice amended) A processor system comprising:

a central processing unit; and

a memory device connected to said central processing unit, said memory device comprised of a plurality of low profile ball grid array semiconductor packages, said low profile ball grid array semiconductor packages comprised of a base substrate having a top surface and a bottom surface, with an aperture therein which extends from said top surface to said bottom surface,

a series of conductive traces located on one of said top surface and said bottom surface of said base substrate,

a plurality of conductive balls connected to said series of conductive traces,

a [thin sheet material] single thin layer of material secured to said base substrate and covering said aperture such that a cavity is formed, said [thin sheet material] single thin layer of material having a thickness of from approximately 0.025 to approximately 0.1 mm, and a semiconductor element mounted in said cavity.

40. (amended) The processor system according to claim 39, said [thin sheet material] single thin layer of material further comprising:

a polyimide based material.

41. (amended) The processor system according to claim 39, said [thin sheet material] single thin layer of material further comprising:

a metal foil based material.

42. (twice amended) A processor system comprising:

a central processing unit; and

a memory device connected to said central processing unit, said memory device comprised of a plurality of low profile ball grid array semiconductor packages, said low profile ball grid array semiconductor packages comprised of a base substrate having a top surface and a bottom surface, said base substrate having an aperture extending from said top surface to said bottom surface,

a series of conductive traces located on one of said top surface and said bottom surface of said base substrate,

a plurality of conductive balls connected to said series of conductive traces,

a [thin sheet material] single thin layer of material secured to said top surface of said base substrate and covering said aperture to form a downward facing cavity, said [thin sheet material] single thin layer of material having a thickness of from approximately 0.025 to approximately 0.1 mm, and a semiconductor element mounted in said downward facing cavity.

43. (amended) The processor system according to claim 42, said [thin sheet material] single thin layer of material further comprising:

a polyimide based material.

44. (amended) The processor system according to claim 39, said [thin sheet material] single thin layer of material further comprising:

a metal foil based material.